

REMARKS

The above amendments are made without prejudice. Reconsideration is respectfully requested.

This application received a FINAL action March 15, 2004. The Request for Continued Examination and this amendment are in response to that action.

The Examiner, in rejecting the pending claims, took the position that the Takei reference discloses “the recited method of nitriding a metal substrate using a pulsed gas method . . .” It is recited in the Takei reference at column 8, lines 53 to 59 that the method disclosed employs a directional reversal of gas flow in a nitriding enclosure to introduce and discharge the gas in a pulse state. However, the method in the Takei reference relies on “uniformity” of pressure, rather than pressure fluctuation. (See Col. 6, lines 10-19).

Nowhere does the Takei reference disclose a method employing a pressure cyclically increased for a period of time and then allowed to drop to a lower level for a further period of time. This distinction is now set forth in independent claims 13 and 30.

Thus, the method of Takei relies on the changing direction of flow of the nitriding gas around the objects to be treated in order to prevent any gas becoming still. In contrast, in the present invention the pressure of the nitriding/carbonitriding atmosphere is cyclically increased for a certain period time and then allowed to drop to a lower level for a further period of time. Thus, it will be apparent that if a pipe is treated by this method, as the pressure around the pipe increases, gas will flow into the pipe and as the pressure decreases gas flows out of the pipe. Consequently, each cycle causes stirring and changing of the gas within the pipe bore.

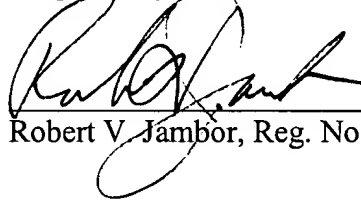
Moreover, unlike the method of Takei, the effectiveness of the presently claimed system does not depend on how the pipes are aligned with the gas flows, since the flow within a pipe bore depends upon pressure changes and not directions of flow outside the pipe.

Consequently, Takei in combination with either Kubo or Yoshinori fails to disclose all of the features of the claimed method, and because it is considered to be advantageous over the known art, the claimed method is considered to be inventive.

Favorable reconsideration is requested.

Any required fees may be charged to Deposit Account No. 10-0460.

Respectfully submitted,



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